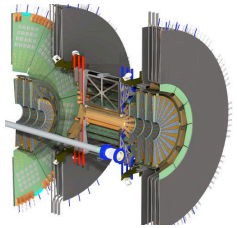
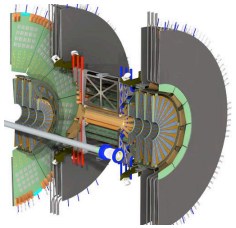


FVTX Monthly Report
December, 2009

Technical Status, Cost & Schedule

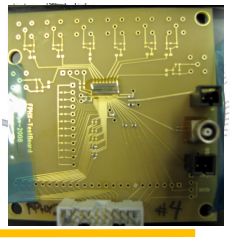
Melynda Brooks, LANL

Recent Progress



- FPHX Chip production order expected to be received Jan. 11, 2010
- HDI-2 purchase order in progress, interconnect to be procured through UNM
- Production sensor, production backplane orders in progress
- SiDet Wedge assembly preparing for production. Fixtures reviewed and in process of being manufactured, schedule contingency options discussed.
- Disk Assembly Prep continues at BNL. Working on metrology and fixture specification
- ROC, FEM, Interface card layouts and procurements in process
- Mechanical work on hold due to personnel departures at HYTEC
- Ancillary system power distribution procurements starting

FPHX Production



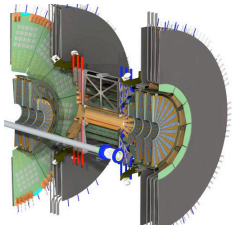
Review of FPHX design and test results Sept 29, 2009

- Got go-ahead to move forward with production order
- BNL rapidly placed order
- MOSIS expects chips completed Jan. 11, 2010

Wafer Testing Needed Upon Receipt

- Probe cards received at FNAL
- Control Software done
- Test software in progress and expected completed by 1st of year
- Working toward single die tests to test procedures first, then move to wafers
- Wafer dicer identified and costed

HDI Status



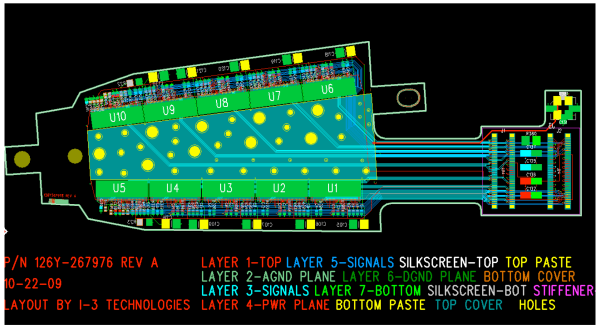
Second round HDI layouts completed and checked again by UNM, Nevis, LANL:

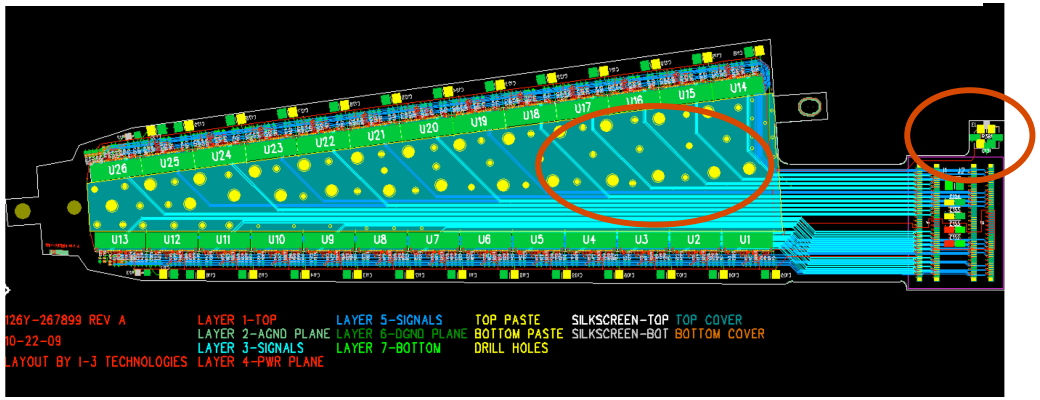
- Decided to remove some unnecessary 0 Ω resistors, increase pull-back from board edges, add more clearance for Vbias net
- Quote for “hand carry” and “volume” production for small and large HDIs
- PR in progress at BNL. Requested ALL (125) small HDIs and 25 large HDIs
- Continued discussion with Dyconex about vent holes in design. Continuing to pursue discussion with others who have HDI experience, esp. VTX.

Interconnect cable layout completed for longest cable

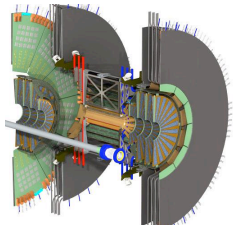
- Procurement through UNM in progress

Eric Mannel, Jon Kapustinsky, will visit Dyconex in January – review recommendation

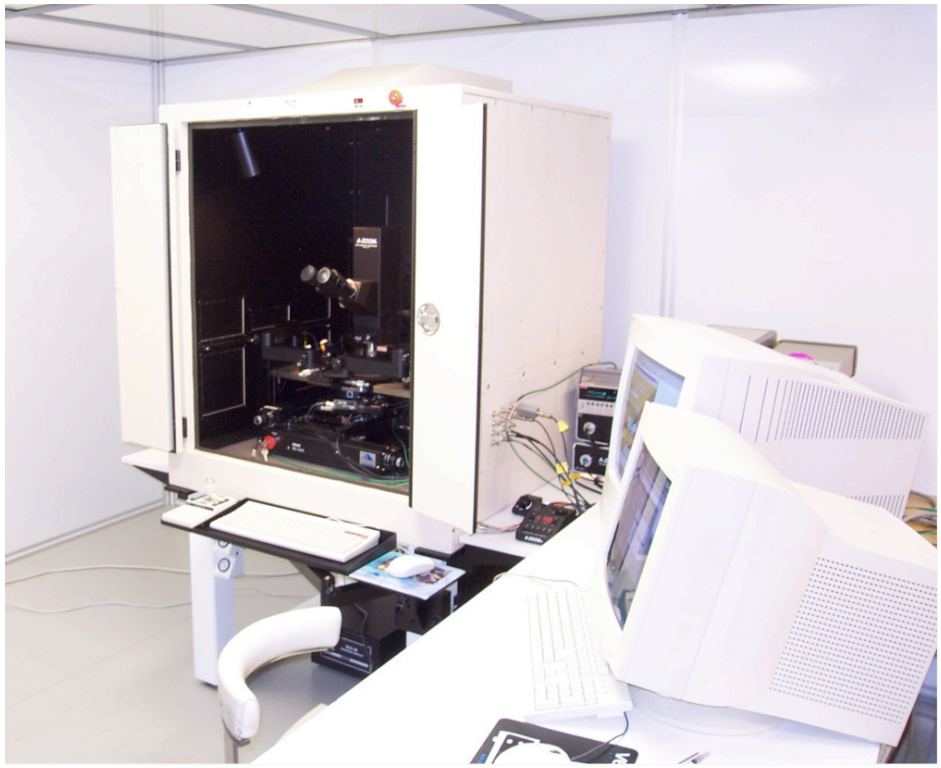




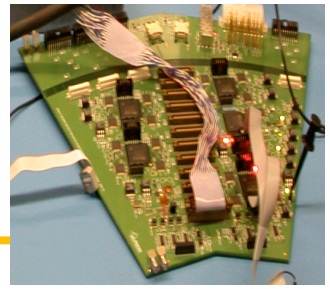
Sensor status



- Hamamatsu production order in process
  - Expect partial deliveries by February 2010
  - Expect full deliveries by March
- Testing after receipt at UNM
  - Probe station, probe cards used previously with prototype sensors
  - Visual inspection of sensors
  - I-V curves, etc.
- Ship to SiDet
  - 1st sensors expected for assembly ~March 2010



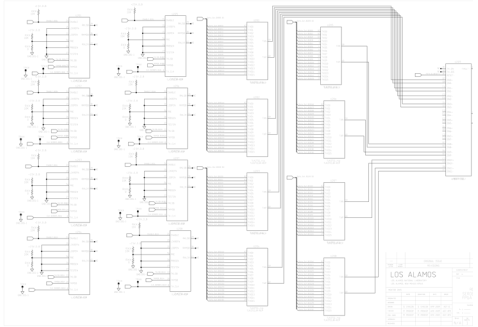
DAQ Development

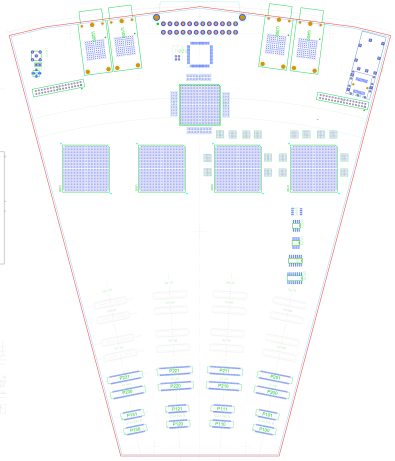


- Clock distribution: prototype board completed and delivered (distributes BCO to various ROC boards)
- Slow Controls Interface Board: completed, review in progress
- FEM: schematics and layout completed, procurement in process
- ROC 2nd round: completed schematics, layout estimate is few months. Working to test what we can with prototypes and cope with longer delivery time. Full-time designer committed to job by AOT.

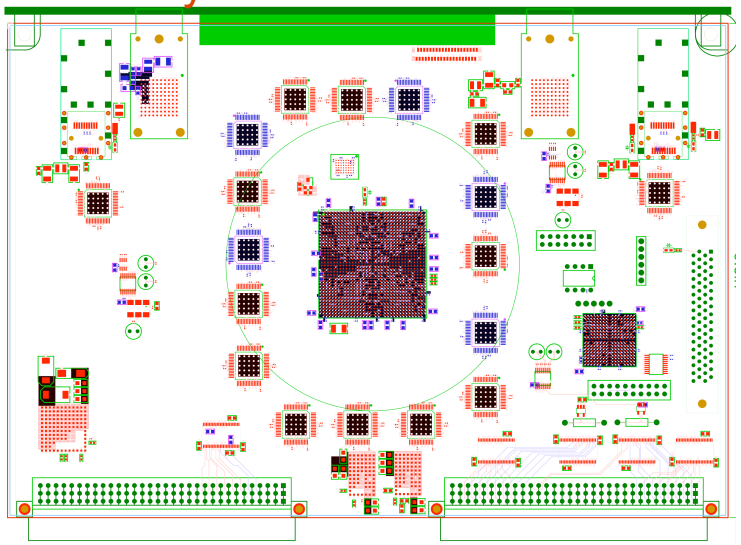
- Procurement of production parts will start now so that parts will be in hand when we want to order production boards

ROC Schematics

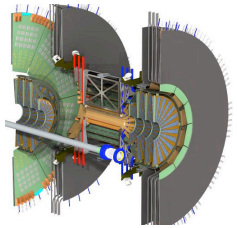




FEM Layout



Mechanical Status



Parent company 3M implemented large reduction in force at HYTEC, with 1-day notice, leaving us with no designer or engineer.

Plan to restart FVTX work – 3M contracting with personnel to finish contracts, future work through national laboratory contractor, most likely

Backplanes

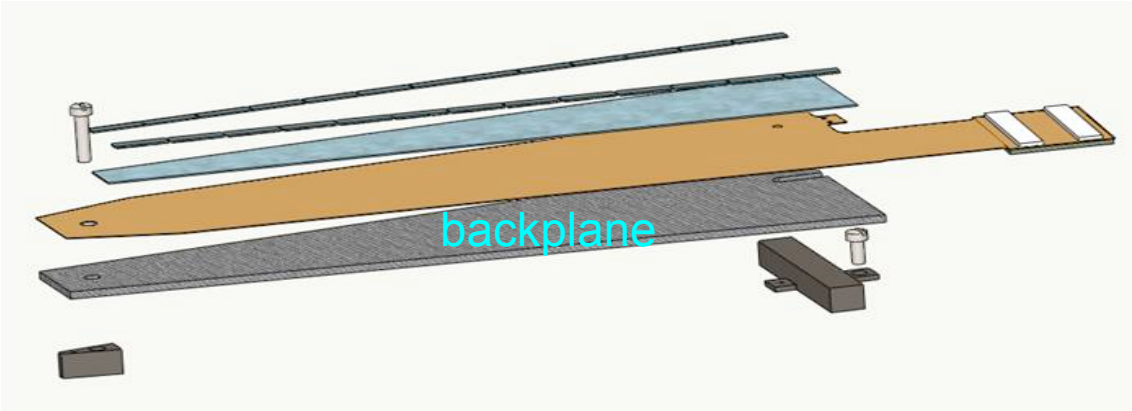
- Production in process
- Material received by LBNL this month. 32 large wedges, 60 small wedges to be manufactured and shipped first

Cage and disks

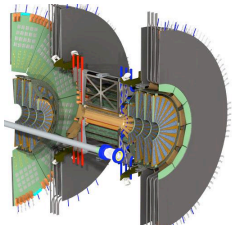
- Cage quote still not received by BNL. Material procurement was to begin Dec. 8 but Eric A. thinks he can maintain schedule if ordered by mid-January.

Wedge Assembly Fixtures

- All final modifications completed. UNM working on fabrication.



Assembly Status

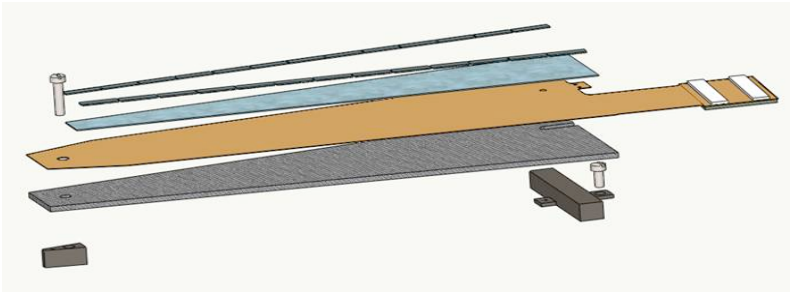


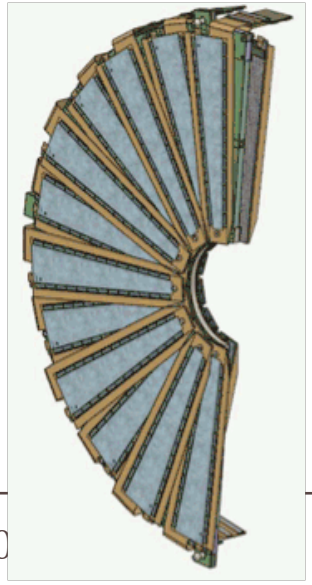
Wedge Assembly

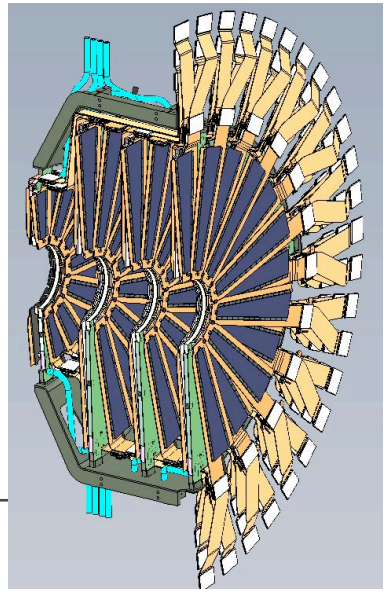
- Assembly fixtures reviewed by SiDet. Fixtures being manufactured at UNM
- Dave Winter making final preparations with SiDet for assembly. Schedule contingency discussed (wire-bonding options, etc.), startup expectations, etc.
- Nevis/LANL working on 2nd ROC test station for wedge testing

Disk Assembly

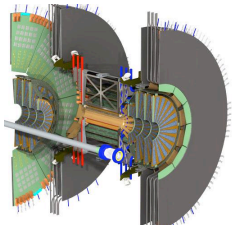
- Steve Pate working on metrology options for the disks. Developing conceptual design for disk and cage assembly fixtures:
  - Frame to hold disk during assembly and metrology (hold in both vertical and horizontal positions)
  - Tool for lifting and carrying disk, inserting into cage
  - Dry box for storage and testing of cages







Ancillary Systems

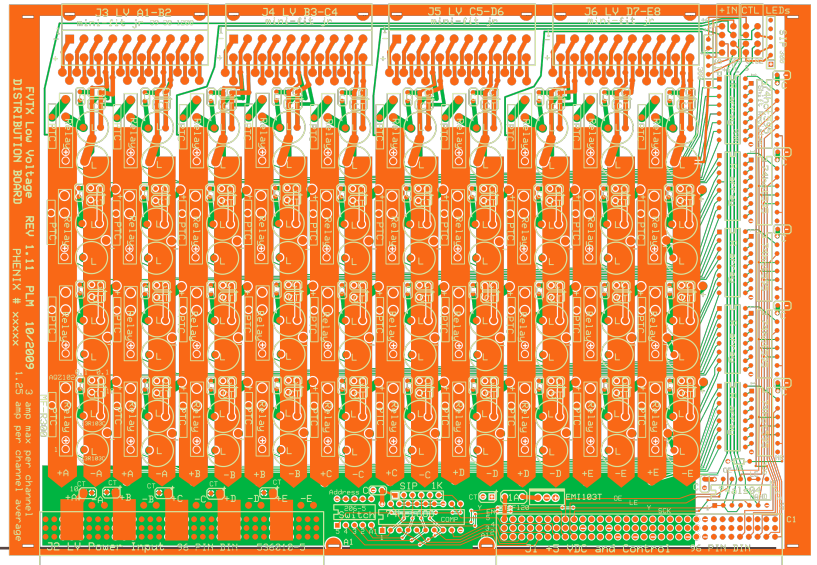


LV and Sensor Bias to Wedges, ROC LV

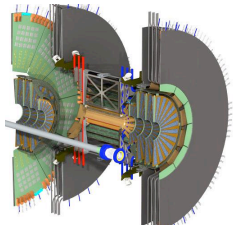
- Propose individual control of each wedge (384 wedges total)
- PHENIX standard LV supplies, with additional distribution cards
- Wiener/Iseg Bias supplies (same as VTX).

Procurement Status

- Wiener/Iseg crate and supply order placed at BNL
- LV supply procurements in process
- Prototype distribution board procurements in process
- DCM II DAQ board procurement in process



Cost & Schedule



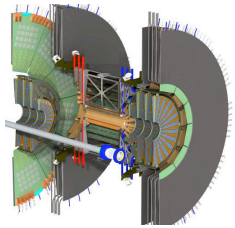
Cost Updates : November status - $810k remaining contingency

- Ancillary systems cost = $60k in Management Plan
  New estimate = $121k
  Can save some if we reduce segmentation, but probably only ~$30-40k
- HDI Production= $259k in last Quarterly
  New estimate with fast turnaround = $318k + $63k burden(?) = $381k
- Request to absorb some infrastructure costs from VTX
- FEM board estimate, based on prototype quote = $175k/52 boards,$198k with LANL ARRA burden MP = $334k, but don't know if another round will be needed
- ROC board estimates still need updated
- Expect savings in backplane mounts, but have not included yet

Schedule

- Still depends upon receipt of working HDIs.
- Baseline – start wedge assembly in February 2010, finish in January 2011, including 8 weeks contingency within wedge assembly task
- Two ½ cages finished by ~January 2011
- Functional testing must be completed by June 2011. We still estimate this gives us ~12 weeks contingency in bench-test project deliverables.
- May have additional contingency in wedge assembly which is slated to produce ~10 wedges/week.

Drafting Milestone Changes



From November Review Report:

"Propose a revised set of control milestones that describe the completion of key schedule goals, with realistic dates", "Add bench testing milestone", "Revise project complete end date"

Possible changes/additions in RED

WBS 1.4.2.5.1	FPHX engineering run complete	Q1 FY10
WBS 1.4.3.3.1	1st Production HDIs Received	Q2 FY10
WBS 1.7.1	Start endcap assembly	Q3 FY10→Q2
WBS 1. 5.3	ROC and FEM production complete	Q2 FY10→Q4
WBS 1.5.5.6	Ancillary electronics installed (in IR or Assembly Area)	Q4 FY10
WBS 1.7.2	Start installation into cage enclosure	Q4 FY10
WBS 1.7.1.1	Place wedges on cooling plate complete	Q1 FY11→Q2
WBS 1.7.2.1	First Two ½ Cages assembled	Q1 FY11
WBS 1.7.2.1	Functional Requirements Tests on Bench Begins	Q1 FY11
WBS 1.7.2.1	½ Cage assembly complete, deliverables met	Q2 FY11
WBS 1.7.5	Verify funct. requirements on Bench ~~and Project Complete~~	Q3 FY11
WBS 1.7.3	Install cages into VTX enclosure complete	Q2 FY11→Q4
WBS 1.7.5	Verify functional requirements in IR	Q4 FY11